

Evidence about Byzantine Glass in Medieval
Greek Texts from the Eighth to the Fifteenth Century

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THIS STUDY PRESENTS a brief overview of the types of information found in medieval Greek texts on the ways in which glass was used in Byzantium.¹ To begin with the question of glass production, Byzantine texts are disappointingly reticent. A tenth-century text by John Kameniates gives the vague information that Thessalonike abounded in glass as well as bronze, iron, tin, and lead, all materials worked by fire.² The most important data are provided by the miracle collection of St. Photeine, composed in the eleventh or twelfth century, which refers to a glass workshop (ἐργαστήριον ὑελοψητικόν) in Constantinople that caught fire.³ This is the only surviving positive evidence of the manufacture of glass in the capital city. A fourteenth-century miracle collection, that of St. Eugenios of Trebizond, mentions that the abbot of his Trapezuntine monastery

1 For obvious reasons, I could not make an exhaustive search of the sources of the 8th to 15th century, but with the assistance of the Dumbarton Oaks hagiography database and the Thesaurus Linguae Graecae (TLG), I have been able to survey a fairly large number of texts of the middle and late period. I am also grateful to colleagues such as Franz Alto Bauer, who have generously directed me to texts not yet in the TLG. The results of my research are limited, but sufficient, I think, to give some idea of the uses of glass in the medieval Greek world.

2 Ioannis Caminiatae *De expugnatione Thessalonicae*, ed. G. Böhlig, CFHB 4 (Berlin, 1973), chap. 9.9, p. 11.85;

trans. D. Frendo and A. Fotiou, *John Kameniates: The Capture of Thessaloniki*, Byzantina Australiensia 12 (Everton Park, Queensland, 2000), 19.

3 F. Halkin, *Hagiographica inedita decem* (Leuven, 1989), chap. 9, p. 122; trans. A.-M. Talbot, "The Posthumous Miracles of St. Photeine," *AB* 112 (1994): 101. J. Henderson and M. M. Mango have also called attention to the importance of this passage in their article "Glass at Medieval Constantinople: Preliminary Scientific Evidence," in *Constantinople and Its Hinterland: Papers from the Twenty-Seventh Spring Symposium of Byzantine Studies, Oxford, April 1993*, ed. C. Mango and G. Dagron (Aldershot, 1995), 344.

had to send to Constantinople or to Armenia when he needed to buy new glass lamps. For Constantinople the text mentions only the purchase of glass, not its manufacture, but the hagiographer states clearly that “glass used to be produced...[in Armenian Phasiane], and therefore everyone in need of glass vessels (σκεύη ὑέλινα) came and bought them there.”⁴ The same text relates that glass vessels were transported in baskets, presumably packed in straw; the baskets were transported either by ship or by men carrying the baskets on litters.⁵ A fourteenth-century law suggests that in the Late Byzantine period, glass and iron workshops were restricted to abandoned and peripheral areas of cities because of the danger of fire.⁶

To turn to glass itself, first of all, how did the Byzantines view this material? Not surprisingly, the adjectives they used emphasized the transparency, clarity, fragility, and reflective nature of the material. Michael Psellos remarked in the eleventh century that glass reflects light just as the moon reflects the sun's rays, and also described glass as “transparent and of great price.”⁷ The ninth-century chronicler George the Monk praised it as “translucent and most clear,” and Emperor John VI Kantakouzenos (1347–1354) commented that glass does not contain light in itself but is capable of receiving light.⁸ As is still true today, Byzantines preferred glass when a transparent or translucent material was required or desirable: in a wine cup the better to appreciate the color of the wine, in a window so that rays of light would pass through, in a lamp so that the light of the flame would illuminate the surrounding area, in a urine flask so that a physician could observe the color and clarity of urine, for mirrors where a reflective surface was required.

Lamps are the most commonly mentioned glass objects, especially in the context of the lighting of church interiors. Large numbers of lamps and candles were necessary to illuminate churches, especially for night services. Monastic *typika* prescribe especially lavish illumination on special feast days, when additional lamps would be lit. Thus the eleventh-century *typikon* of Michael Attaleiates states that 1 nomisma is to be spent on supplementary small glass lamps (ὑπὲρ ὑέλίου) for feast days.⁹ As mentioned, the *miracula* of St. Eugenios by John Lazaropoulos tell how the abbot sent monks to Armenia to acquire new lamps for the feast day of the patron saint of the monastery. At other monasteries, silver lamps might sometimes be substituted for the customary glass ones on special occasions.¹⁰ The cleaning, filling, and lighting of all these lamps was a time-consuming (and sometimes perilous) activity, especially when it involved hauling on ropes to lower and raise lamps hanging high overhead, as was the case with the enormous glass lamp (κρατήρ) at the church of St. Photeine described in the *miracula* of St. Photeine.¹¹ If the lamplighter at the Stoudios monastery broke a glass lamp in the course of his duties, he was required to pay a fine equivalent to the cost of the object.¹² Glass lamps were favored gifts of donors to monasteries for just this reason, because replacements were constantly needed.¹³

13 For examples of gifts of glass lamps to churches, see I. Hausherr, “Vie de Syméon le Nouveau Théologien,” *OCA* 12 (1928): chap. 34.21 (gift of glass lamps); J. Darrouzès, “Notice sur Grégoire Antiochos,” *REB* 20 (1962): 88 (glass lamps for bronze chandeliers at the new convent of St. Basil); E. Miller, *Manuelis Philae carmina* (Paris, 1857), 2:237 (glass lamp presented to Pege monastery in Constantinople).

4 J. O. Rosenqvist, *The Hagiographic Dossier of St. Eugenios of Trebizond in Codex Athous Dionysii* 154, Acta Universitatis Upsaliensis, Studia Byzantina Upsaliensia 5 (Uppsala, 1996), chaps. 3 and 16 of Lazaropoulos's *Synopsis*, pp. 262–63, 294–97. The text is of the 14th century, but the miracles seem to date to ca. 900. See also J. O. Rosenqvist, “Lamps for St. Eugenios: A Note on Byzantine Glass,” *Eranos* [Acta Philologica Suecana] 92 (1994): 52–59.

5 Rosenqvist, *Hagiographic Dossier*, chaps. 3 and 16, pp. 262–63, 296–97.

6 K. G. Pitsakes, *Κωνσταντίνου Ἀρμενοπούλου Πρόχειρον Νόμων ἡ Ἐξάβιβλος* (Athens, 1971), bk. 2.9, pp. 117–18: ὑελοργούς καὶ σιδηροργούς...οὐ χρὴ ἐν αὐταῖς ταῖς πόλεσι τὰ τοιαῦτα ἐργάζεσθαι.

7 D. J. O'Meara and J. M. Duffy, eds., *Michaelis Pselli philosophica minora*, vol. 2, *Opuscula psychologica, theologica, daemoneologica* (Leipzig, 1989), opusc. 13, p. 51.28. G. Dennis, *Michaelis Pselli Orationes forenses et acta* (Stuttgart, 1994), or. 1, lines 2648–49, p. 96.

8 *Georgii Monachi Chronikon*, ed. C. de Boor, corr. P. Wirth (Stuttgart, 1978), 2:443.3. E. Voordeckers and F. Tinnefeld, *Iohannis Cantacuzeni Refutationes duae Prochori Cydonii et Disputatio cum Paulo Patriarcha latino Epistulis Septem Tradita* (Turnhout, 1987), p. 89, ref. 1, chap. 58, line 22.

9 See P. Gautier, *La Diataxis de Michel Attaliat* (Paris, 1981), 71.892, and especially the translation in *BMFD*, 1:350 and n. 21. Note, however, that ὑελίου could also plausibly be emended to ἐλαίου, olive oil, thus totally changing the sense of the passage.

10 H. Delehay, *Deux typica byzantins de l'époque des Paléologues* (Brussels, 1921), chap. 37, p. 126.25–27; trans. in *BMFD* 3:1277.

11 Talbot, “Posthumous Miracles,” 99–100 (n. 3 above). In this case a priest was hauling the lamp back into its place after refilling it with oil, when it slipped from his hands and came crashing to the ground. But it did not break, “although the vessel was of glass.”

12 Theodore of Stoudios, *Poenae monasteriales*, PG 99:1741–44.

The sources refer to glass cups as well, most often for wine, to show off its color and clarity.¹⁴ A ninth-century saint's life tells how John, the deputy governor of the Kibyrrhaiot theme in southern Anatolia, decided to become a monk. On the eve of his taking vows, he gave a banquet for his friends at which he served top quality wine. He ordered his servants, however, to serve him the juice of boiled onions in a red glass cup (κισσύβιον ὑέλινον φοινικίζον) so that his guests would not realize that he was drinking onion juice instead of fine wine!¹⁵ For our purposes, the interest of the story is that red wineglasses were not unknown in Byzantium.

A tragic story of a broken wine cup is related in a letter of Michael Choniates, exiled bishop of Athens, at the beginning of the thirteenth century. He wrote to his nephew George the *sebastos* to console him on the murder of his first-born son, Michael, by the tyrant Leo Sgouros. Sgouros had taken the child hostage, castrated him, and evidently made him his cupbearer. When the child accidentally broke a wineglass, the infuriated tyrant hit the boy with an iron club and killed him. According to Choniates, Sgouros cried out, "Alas, my glass cup has died," and considered his life not worth living unless the youth died immediately, to share the fate of the wineglass. Choniates describes the glass as "cheap and easily broken" and laments, "Oh, what a valuable thing has perished for the sake of a paltry vessel, not gold for bronze...but a creation of the hand of God for the sake of a cup poorly made of glass and worth three obols."¹⁶

A third notable allusion to a wine cup is found in a fourteenth-century synodal act about the trial of a Constantinopolitan monk who had made a nun pregnant. Desperate to obtain an abortifacient potion, he gave a certain Syropoulos five gold coins and an "Alexandrian wine cup" (ὑελοβίκιον),¹⁷ a precious indication of the importation of Mamluk glass to Constantinople in the Palaiologan period.

In addition to drinking cups, platters, bowls, and jars might also be made of glass. The testament of Sabas, an early-twelfth-century abbot of the monastery of St. John on Patmos, includes a rare listing of such objects: "conical glasses, twelve bowls and twelve platters, two small glass bowls and one large dish and a blue glass platter, three clear glass jars, and large and small cups, and a cupboard with its cups, small and large glasses."¹⁸

Glass flasks were used for a variety of purposes, for example, as containers of holy oil used as amulets. Thus Pachymeres reports that soldiers about to leave on campaign against Charles of Anjou were given glass vessels containing papyrus that had been dipped in holy oil.¹⁹ Glass vials were also used as containers for poison.²⁰

There is only limited and tantalizing literary evidence for window glass. In the eleventh-century *vita* of St. Symeon the New Theologian, an angry neighbor threw a stone at the saint while he was sitting at his desk writing. The stone "broke the glass (τὸν ὑέλινον) [presumably in a window] and hit the saint's skull."²¹ In the twelfth-century typikon for the Kecharitomenē convent, the abbess is urged to replace broken windowpanes on a regular basis (μηδὲ τοῦ σμικροτάτου καταφρονεῖν, ἄχρι ἐνὸς ὑελίου ἢ μείωσις γένηται).²² In the same century, Niketas Choniates relates that Emperor Manuel I, terrified by astrologers' predictions of violent winds, "removed the glass (οἱ ὑελοι) from the imperial buildings so that they should not be damaged by the blasts of the winds."²³ And during the palace revolution of John the Fat in 1200, the rebels broke the glass windows in the palace church of the Pharos. Mesarites states that the window panes were inserted into a framework of wooden crosses and received the light of the sun to

14 See, for example, MM 6:245, and P. Gautier, "Le typikon du sébaste Grégoire Pakourianos," *REB* 42 (1984): 125.1753.

15 *Vita* of Antony the Younger, ed. A. Papadopoulos-Kerameus, *PPSB* 19.3 (1907): 202.20 ff.

16 *Michaelis Choniatae epistulae*, ed. F. Kolovou, CFHB 41 (Berlin, 2001), epp. 100–101.

17 MM 1:548–49.

18 MM 6:245: μουχρούτια, γαβάδια δώδεκα καὶ σκουτάλια δώδεκα, ὑάλινα γαβαδίτζια δύο καὶ ἐν μέγαν πινάκιν καὶ σκουτέλιον ὑάλινον βένετον, κουρούπια τρανὰ ὑάλινα τρία καὶ βίκια μεγάλα τε καὶ μικρά, βικοθήκη μετὰ τῶν βικίων αὐτῆς, ποτήρια μικρά τε καὶ μεγάλα.

19 A. Failler, ed., *Georges Pachymères: Relations historiques*, trans. V. Laurent (Paris, 1984), 2:645.7–8.

20 S. Efthymiadis, ed. and trans., *The Life of the Patriarch Tarasios by Ignatios the Deacon*, Birmingham Byzantine and Ottoman Monographs 4 (Aldershot, 1998), chap. 4.4.1–2; *Ioannis Cantacuzeni eximperatoris historiarum libri quattuor*, ed. L. Schopen (Bonn, 1831), 2:597.14, 20.

21 I. Hausherr, "Vie de Syméon le Nouveau Théologien," *OCA* 12 (1928): chap. 112.11, p. 154.

22 This is my interpretation of chap. 73 of the typikon (δεῖ δὲ...τὴν...καθηγουμένην...μηδὲ τοῦ σμικροτάτου καταφρονεῖν, ἀλλὰ καὶ ἄχρι ἐνὸς ὑελίου ἢ μείωσις γένηται, παρ' εὐθύς τὸν τοῦ λείψαντος τόπον ἀναπληροῦν δι' ἐτέρου), following the translation of P. Gautier ("Le typikon de la Théotokos Kécharitômenê," *REB* 43 [1985]: 128), rather than that of R. Jordan in *BMFD* 2:703, who interprets ὑέλιον as a glass lamp.

23 *Nicetae Choniatae Historia*, ed. J.-L. van Dieten, CFHB 11.1–2 (Berlin, 1975), 221.37–39: οἱ τῶν βασιλικῶν οἰκοπέδων καθηροῦντο ὑελοι, ὡς εἶεν ἀπαθείς ταῖς τῶν ἀνέμων ἐκθησαυριζομέναις πνοαῖς (trans. H. Magoulias, *O City of Byzantium: Annals of Niketas Choniates* [Detroit, 1984], 124–25).

illuminate the church.²⁴ A fourteenth-century text provides valuable evidence for the use of stained glass in the Palaiologan period; in the course of a simile, the author writes: “After setting pieces of glass of various colors in windows, we see the rays of light that enter from outside through them bringing to the glass the qualities of bright colors, while [the rays] themselves remain unchanged in themselves and uncolored.”²⁵

I pass very quickly over the use of glass for ornamentation—the most common, of course, being mosaic tesserae. In the biography of his grandfather, Basil I, Emperor Constantine VII Porphyrogenetos described the walls of one of the palace halls (Kainourgion) as made of multicolored “plaques” (πλάκες) of glass, so that they seemed to be adorned with the shapes of different flowers.²⁶ This could perhaps refer to mosaic decoration, but more likely describes larger pieces of cut glass, especially since the term ψηφίδες is used for mosaic tesserae a few lines above in the same passage.²⁷ When real gems were too costly, fake glass jewels frequently ornamented icon frames, garments, crowns, and jewelry.²⁸

Just as glass beakers are essential utensils for chemical experiments today, glass vessels were prized by the Byzantines when they needed to make precise observations on the nature of various liquids. We learn from a fourteenth-century decision of the patriarchal court that, in order to verify that the water in a baptismal font had been polluted, a monk used a glass flask (ἐξ ὑάλου φυάλην) to take a sample and check its purity.²⁹ The medical writer Paul of Aigina recommended that when testing the quality of milk, one should pour it into a glass vessel, add rennet, and observe the proportion of curds to whey in the coagulated milk.³⁰ Recipes for alchemical experiments frequently prescribed the use of various sorts of glass flasks and beakers.³¹ And, of course, glass vessels (so-called urine glasses) were preferred by physicians for observations on the color, consistency, and clarity of urine (uroscopy). As the fourteenth-century specialist in urology John Aktouarios noted, “Urinals should be made of very clear and thin glass, so that the colors may be precisely revealed.”³² He also commented that different shapes of urinals had their advantages and disadvantages for precision of diagnosis, and personally recommended urinals in the shape of beakers or drinking cups but somewhat larger in size. He advised against adding glass bands to the urinals since they might adversely affect the observation of color and consistency.³³ Domestic use of such glass urinals is suggested by a passage from the tenth-century *vita* of the saintly empress Theophano, wife of Leo VI. When her hagiographer was stricken with kidney stones and was on the point of death due to retention of urine, he sent to the church of the Holy Apostles for holy water. After drinking it, he passed the kidney stone in a flood of pus-filled urine that filled up two glass vessels (ὑέλινα σκεύη).³⁴ Glass urinals were evidently so common in Byzantium that they became proverbial: “The urinal and the drinking cup are made out of the same glass.”³⁵

34 *Zwei griechische texte über die Hl. Theophano, die gemahlin Kaiser Leo VI*, ed. E. Kurtz (St. Petersburg, 1898), p. 23, chap. 31. See also the verse of Ptochoprodromos's satirical poem on abbots, which describes how doctors come to examine his feces in a glass chamberpot; H. Eideneier, *Ptochoprodromus* (Cologne, 1991), poem 4, line 566.

35 Cf., for example, *Georgii Monachi chronicon breve*, PG 110:1220.49: ποτήριον καὶ καρούρα ἀπὸ ὑάλιν ἕνα, and Michael Glykas, *Annales*, ed. I. Bekker (Bonn, 1836), 445.21: ἀμῖς καὶ ποτιστήριον ἐκ τῆς αὐτῆς ὑέλου.

24 Nikolaos Mesarites, *Palastrevolution des Johannes Komnenos*, ed. A. Heisenberg, Programm des königlichen alten Gymnasiums zu Würzburg 1906/7 (Würzburg, 1907), 34–35: εἰς τὸν ναὸν ὑποστρέψαντες κατείδομεν τὸ μεσημβρινὸν ἐκεῖνο κλίτος καὶ πάλιν καταπονούμενον, τὸ ἐξ ὑέλου καὶ σταυρωμάτων ξυλίνων συμπεπηγὸς κατακλώμενον, τὸ φῶτα δεχόμενον ἐξ ἡλίου πρωΐθεν καὶ εἰσκομίζον ὡς ἐξ ἀδῆλων πόρων τῶν ὑέλων ἐνδοθεν τοῦ νέω.

25 John Aktouarios, *De spiritu animali* 1.7.8, ed. I. L. Ideler, *Physici et medici graeci minores* (Berlin, 1841; repr. Amsterdam, 1963), 1:326: ...διὰ τῶν φωταγωγῶν θυρίδων ὑέλους διαφόρων παραπετάσαντες χρωμάτων τὰς ἐκείθεν δι' αὐτῶν εἰσαγομένης τοῦ φωτὸς ἀκτῖνας τὰς ποιότητας τῶν ἐπανθούντων ταῖς ὑέλοις ἐπιφερομένης ὁρώμεν χρωμάτων, αὐταὶ δὲ καθ' αὐτὰς ὁμοειδεῖς τελοῦσι καὶ ἀχρωμάτιστοι....

26 *Theophanes Continuatus*, ed. I. Bekker (Bonn, 1838), 333.11.

27 *Ibid.*, 333.8.

28 See *Nicephori Gregorae Byzantina historia*, ed. L. Schopen (Bonn, 1830), 2:789.2–3.

29 *MM* 1:141.

30 *Paulus Aegineta*, ed. I. L. Heiberg, *Corpus Medicorum Graecorum* 9 (Leipzig, 1921), 9.1:9.28.

31 See Nikephoros Blemmydes, *Περὶ τῆς χρυσοποιῆας*, ed. M. Berthelot and C. M. Ruelle, *Collection des anciens alchimistes grecs* (Paris, 1888; repr. London, 1963), 2:452.13, 453.6–7, 454.5, 9, 14, etc.

32 John Aktouarios, *De urinis* 2.1.1, ed. I. L. Ideler, *Physici et medici graeci minores*, 2:32.20–22: αἱ τοίνυν ἀμίδες ἐστῶσαν ἐκ λευκῆς μὲν πάνυ καὶ λεπτῆς ὑέλου κατεσκευασμένα, ἵνα ἀκριβῶς τὰ χρώματα διαφαίνηται.

33 *Ibid.*, 2.1, pp. 32–33. For additional references to urine glasses, see the treatise of Nikephoros Blemmydes, *De urinis*, ed. A. Diamandopoulos in *Musical Uroscopy: On Urines, by the Wisest Vlemydes; An Excellent Medical Work in the Iambic Manner, by the Wisest Psellus* (Athens, 1996), 25–39.

Byzantines used glass in some unusual ways as well. We learn from the *Geoponika*, a tenth-century compilation of advice about agriculture and gardening, that glass vessels were used sometimes to mold the shape of fruits. A glass container of the desired shape would be placed around the immature fruit, which, as it grew, would expand in the mold to produce a fruit of different form than the customary specimen.³⁶ Glass vessels were also used for long-term storage of figs; a cup (ὑέλινον ποτήριον) would be inverted over the fig and sealed with wax to prevent any air from seeping in.³⁷

The tenth-century *vita* of St. Theodore Teron tells how the baby Theodore's mother died in childbirth, and that his father was at a loss as to how to feed the infant. In the end he kept the baby alive by cooking up a porridge of wheat and barley, sweetened with honey, and put it in a breast-shaped glass bottle from which the baby could suck.³⁸ Glass balls (ἐξ ὑέλου σφαῖραν) were used by jugglers and a glass cup was used in a sport that combined golf and polo; a future emperor, John Tzimiskes, "used to place a ball made of leather on the base of a glass cup (ὑελίνου σκύφους), and, goading his horse with his spurs to quicken its speed, he would hit the ball with a stick to make it leap up and fly off; and he would leave the cup remaining in place, undisturbed and unbroken."³⁹

Finally, there is a puzzling passage from the early-thirteenth-century history of Niketas Choniates that alludes to animals caught by hunters and confined within "transparent glass vessels" (διαφανέσιν ὑελίνοις ἄγγεσιν).⁴⁰ One can perhaps imagine small animals such as frogs and mice being placed in a glass container, like a cage, but it is harder to conceive of larger animals such as deer or boars being housed in glass cages. Yet this is what Choniates seems to imply. The historian laments that, as a result of his separation from Constantinople during his exile following the Latin conquest of the city in 1204, he suffers "the same anguish as experienced by some animals when beholding their own kind ensnared by hunters and confined within a glass cage [lit., "vessel"]. Those animals, gazing upon the sight of their fellow beast, visible in the clarity and brightness of the vessel, are wholly unable to come into physical contact with it. For this reason they vainly circle the receptacle in dismay, bewildered by the captive beast's countenance...so dramatically altered from its former appearance" (perhaps alluding to the distortion caused by the glass).⁴¹

It should be clear from the passages cited that, although surviving examples of Byzantine glass are relatively rare today, textual evidence demonstrates that it was a material used for a wide variety of purposes in Byzantium. The studies that follow present further specimens of Byzantine glass, either as depicted in works of art, or artifacts found in archaeological excavations, and thus permit the reader to visualize some of the objects described above.

—Dumbarton Oaks

36 *Geoponica sive Cassiani Bassi scholastici De re rustica eclogae*, ed. H. Beckh (Leipzig, 1895), 10.7.6.2.

37 *Ibid.*, 10.56.6.1.

38 *Vita* of Theodore Teron by Nikephoros Ouranos, ed. F. Halkin, *Martyrs grecs* (London, 1974), chap. 2, p. 314: ὑελῶ τε ἄγγει ἐγγέων—μαζῶ δὲ τὸ ἄγγος ὡμοίωτο.

39 *Nicephori Gregorae byzantina historia*, ed. L. Schopen (Bonn, 1829), 1:350.15–17. *Leonis Diaconi Caloënsis Historiae*, ed. C. B. Hase (Bonn, 1828), 97.12–17.

40 *Nicetae Choniatae historia*, ed. van Dieten, 579.

41 Trans. Magoulias, *O City of Byzantium*, 318 (n. 23 above).